Name _____ Class _____ Date _____

Skills Worksheet

Directed Reading B

Section: Friction: A Force That Opposes Motion (pp. 350–355)

1. What type of force is needed to change the velocity of objects?

an unbalanced net force

2. The force that opposes motion between two surfaces that are in contact is called friction.

THE SOURCE OF FRICTION

3. What are two factors that affect the magnitude of friction between two surfaces?

1. the roughness or grittyness of the surfaces in contact (lubricants can decrease this)

2. the strength of the force pushing the surfaces together, This is called the normal force and is usually in the same direction as gravity.

4. What happens to friction if the force pushing surfaces together increases?

friction increases if the normal force increases because the hills and valleys get closer together

5. Objects that weigh less exert less downward force than objects that weigh more.

6. Friction is usually greater between materials that have rough surfaces compared to the amount of friction between smooth surfaces.

TYPES OF FRICTION

7. What are the two main types of friction?

kinetic and static

a. smooth and rough
b. kinetic and static
c. light and heavy
d. moving and nonmoving

8. What is kinetic friction?

friction between two moving surfaces

a. friction between two heavy objects
b. friction between two rough surfaces
c. friction between two moving surfaces
d. friction between two smooth surfaces

9. Two types of kinetic friction are sliding kinetic friction and rolling kinetic friction.

10. Which type of kinetic friction is usually greater?

sliding kinetic friction

11. What is one example of the use of sliding kinetic friction?

applying the brakes on a bicycle

12. What is one example of the use of rolling kinetic friction?

moving a refrigerator on a skateboard.

13. When force applied to an object does not cause the object to move, _____ friction occurs.

static

14. As soon as an object starts moving, what replaces static friction?

kinetic friction

FRICTION: HARMFUL AND HELPFUL

15. Friction by wind and water can cause _____.

erosion

16. What is a substance put on surfaces to reduce the friction between the surfaces called?

a lubricant

17. Name three ways friction can be reduced.

Use lubricants; switch from sliding kinetic friction to rolling kinetic friction; make surfaces that rub against each other smoother by sanding them smoother

18. What are two ways friction can be increased?

Make surfaces rougher; increase the force pushing the surfaces together. increase the surface area of the two objects, like bigger brake pads and disc.